Chapter 1
Introduction

1-1. Purpose

This manual provides technical criteria and guidance for design of rock foundations for civil works or similar large military structures.

1-2. Applicability

This manual applies to HQUSACE elements, major subordinate commands, districts, laboratories, and field operating activities.

1-3. References

References pertaining to this manual are listed in Appendix A. References further explain or supplement a subject covered in the body of this manual. The references provided are essential publications to the users of this manual. Each reference is identified in the text by either the designated publication number or by author and date. References to cited material in tables and figures are also identified throughout the manual.

1-4. Scope of Manual

The manual provides a minimum standard to be used for planning a satisfactory rock foundation design for the usual situation. Chapter 2 provides a discussion on design considerations and factor of safety. Chapter 3 provides guidance on site investigation techniques and procedures. Chapter 4 provides guidance on rock mass characterization and classification schemes. Chapters 5 and 6 provide guidance on related topic areas of foundation deformation and settlement and foundation bearing capacity, respectively. Chapters 7 and 8 provide guidance on the sliding stability assessment of gravity structures and slopes cut into rock mass, respectively. Chapter 9 provides guidance on the design of rock anchorage systems. Chapter 10 provides guidance on selection of appropriate geotechnical instrumentation. Chapters 11 and 12 provide discussion on construction considerations and special topics, respectively. Unusual or special site, loading, or operating conditions may warrant sophisticated analytical designs that are beyond the scope of this manual.

1-5. Coordination

A fully coordinated team of geotechnical and structural engineers and engineering geologists should insure that the result of the analyses are fully integrated into the overall design feature being considered. Some of the critical aspects of the design process which require coordination are the following.

a. Details and estimates. Exploration details and preliminary estimates of geotechnical parameters, subsurface conditions and design options.

b. Features. Selection of loading conditions, loading effects, potential failure mechanisms and other related features of the analytical model.

c. Feasibility. Evaluation of the technical and economic feasibility of alternative structures.

d. Refinement of design. Refinement of the preliminary design configuration and proportions to reflect consistently the results of more detailed geotechnical site explorations, laboratory testing, and numerical analyses.

e. Unexpected variations. Modifications to features during construction due to unexpected variations in the foundation conditions.